


VPDES PERMIT FACT SHEET

This document gives the pertinent information concerning the **reissuance** of the VPDES permit listed below. This permit is being processed as a **minor municipal** permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-00 et seq.

The discharge results from the operation of a **0.005 MGD intermittent sand filter system** for the Smith Mountain Dam Visitor's Center. This permit action consists of revising the total residual chlorine limits and the special conditions. (SIC Code: 4952, 4911)

1. **Facility Name and Address:**
Smith Mountain Dam Visitor's Center
PO Box 2021
Roanoke, VA 24022
Location: 2072 Ford Road (State Route 908), Sandy Level, Bedford County
2. **Permit No:** VA0074179 Existing Permit Expiration Date: October 6, 2012
3. **Owner/ Facility Contacts:**
Alan R. Wood, Director, Water & Ecological Resource Services, (614) 716-1233
arwood@aep.com
April Looney, Environmental Coordinator (540) 985-2676, adlooney@aep.com
4. **Application Complete Date:** April 19, 2012
Permit Drafted By: Becky L. France, Water Permit Writer
Date: July 2, 2012 (Revised 8/2/12, 8/29/12)
DEQ Regional Office: Blue Ridge Regional Office
Reviewed By: Kip D. Foster, Water Permit Manager
Reviewer's Signature:  Date: 9/4/12
Public Comment Period Dates: From 8/14/12 To 9/3/12
5. **Receiving Stream Classification:**
Receiving Stream: Roanoke River (River Mile: 158.09)
Watershed ID: VAW-L13R
River Basin: Roanoke River
River Subbasin: Roanoke River
Section: 6h
Class: IV
Special Standards: PWS
7-Day, 10-Year Low Flow: 163 MGD 7-Day, 10-Year High Flow: 201 MGD
1-Day, 10-Year Low Flow: 25 MGD 1-Day, 10-Year High Flow: 40 MGD
30-Day, 10-Year Low Flow: 190 MGD 30-Day, 10 Year High Flow: 222 MGD
30-Day, 5-Year Low Flow: 220 MGD Harmonic Mean Flow: 272 MGD
Tidal: No 303(d) Listed: No

Attachment A contains a copy of the flow frequency determination memorandum.

6. **Operator License Requirements:** None

7. **Reliability Class:** III

8. **Permit Characterization:**

- ☐ Private ☐ Interim Limits in Other Document
☐ Federal ☐ Possible Interstate Effect
☐ State
☐ POTW
☒ PVOTW

9. **Wastewater Treatment System:** A description of the wastewater treatment system is provided below. See **Attachment B** for the wastewater treatment schematic and **Attachment C** for a copy of the site inspection report. Treatment units associated with the discharge are listed in the table below.

Table I
DISCHARGE DESCRIPTION

Outfall Number	Discharge Source	Treatment (Unit by Unit)	Flow (Design) (MGD)
001	Smith Mountain Dam Visitor's Center	septic tank dosing chamber rotary arm sand filter holding chamber surge chamber tablet chlorinator chlorine contact chamber retention chamber v-notched weir/sample box	0.005

American Electric Power operates a wastewater treatment facility for the Smith Mountain Dam Visitor's Center. The 0.005 MGD sewage treatment works consists of a septic tank, sand filter, and tablet chlorinator system.

Wastewater from the restrooms is collected and routed into a 6,500-gallon septic tank. Supernatant from the tank flows by way of a 450-gallon dosing chamber to a rotary arm sand filter. Sand filter underflow is routed to a 1,175 gallon holding chamber equipped with two submersible effluent transfer pumps and three float switches. Wastewater is manually transferred as a batch operation to a 165-gallon surge chamber. Wastewater from the surge chamber is routed through a Sanuril tablet chlorinator into the chlorine contact chamber for a 30-minute detention time. Chlorinated effluent flows through a retention chamber. Then it flows through a weir/sample box and is discharged down a cliff to the Roanoke River.

10. **Sewage Sludge Use or Disposal:** This facility collects septage in a septic tank. This septage is hauled to a POTW as needed.
11. **Discharge Location Description:** A USGS topographic map which indicates the discharge location, any significant dischargers, any water intakes, and other items of interest is included in **Attachment D**. The latitude and longitude of the discharge is N 37°02'27", E 79°32'05".

Name of Topo: Smith Mountain Dam Number: 078D

12. **Material Storage:** Calcium hypochlorite tablets are stored outside in a watertight container.
13. **Ambient Water Quality Information:** Memoranda or other information which helped to develop permit conditions (special water quality studies, STORET data, and any other biological and/or chemical data, etc.) are listed below.

There is a continuous record gage on the Roanoke River at Altavista and another gage on Goose Creek near Huddleston. Flow frequencies and drainage area were determined by subtracting the Goose Creek gage data from the Altavista gage and the difference projected to the discharge point using proportional drainage areas.

Data for STORET Station 4AROA158.22 were collected in Smith Mountain Lake. When the dam is generating power, any effluent discharged into the Roanoke River is downstream from this monitoring station. During periods when the turbines are pumping river water back into the lake, any effluent discharged into the Roanoke River flows toward Smith Mountain Lake. Intakes for the dam are located at a depth of 50 feet and 160 feet. The 90th percentile temperature and pH values used in the wasteload allocation spreadsheet were determined from STORET between 2007 and 2011. Average hardness was determined from STORET station data between 1997 and 2003. See **Attachment E** for a summary of the STORET data.

Smith Mountain Dam Visitor's Center WWTP discharges into the Leesville Lake/Old Womans Creek Watershed (VAW-L13R). This segment of the Roanoke River has been designated as a public water supply.

14. **Antidegradation Review and Comments:** Tier 1 ☐ Tier 2 ☒ Tier 3 ☐

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with Tier determination. The Roanoke River is listed as a public water supply in the segment where the discharge is located. The Roanoke River in this segment (VAW-L13R) is not listed on Part I of the 303(d) list for exceedance of water quality criteria. Available pollutant data have been analyzed, and the existing water quality condition for pollutants for which data exist compared to the water quality standards. This analysis indicates the water quality of the receiving stream does not exceed numeric criteria for any pollutant analyzed. Therefore, this segment of the Roanoke River is classified as a Tier 2 water, and no significant degradation of existing quality is allowed.

For purposes of aquatic life protection in Tier II waters, "significant degradation" means that no more than 25 percent of the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, "significant degradation" means that no more than 10 percent of the difference between the human health criteria and the existing quality (unused assimilative capacity) may be allocated. The antidegradation baselines for aquatic life and human health are calculated for each pollutant as follows:

Antidegradation baseline (aquatic life) = $0.25 (\text{WQS} - \text{existing quality}) + \text{existing quality}$

Antidegradation baseline (human health) = $0.10 (\text{WQS} - \text{existing quality}) + \text{existing quality}$

Where:

"WQS" = Numeric criterion listed in 9 VAC 25-260-00 et seq. for the parameter analyzed

"Existing quality" = Concentration of the parameter being analyzed in the receiving stream

When applied, these "antidegradation baselines" become the new water quality criteria in Tier 2 waters and effluent limits for future expansions or new facilities must be written to maintain the antidegradation baselines for each pollutant. Antidegradation baselines have been calculated as described above and included in **Attachment F**. Note that if the permittee proposes an increase in design capacity, these antidegradation wasteload allocations would need to be modified to reflect a new effluent design flow.

Smith Mountain Dam Visitor's Center opened in May of 1967. So, this discharge began prior to the antidegradation policy requirements set forth in the Clean Water Act on November 28, 1975. Existing grandfathered facilities that propose an expansion or increase in the discharge of pollutants are subject to antidegradation requirements. This facility's discharge is existing, and the application does not indicate an expansion or proposed increase in the discharge of pollutants via this outfall. Therefore, the antidegradation baselines do not apply to this permit reissuance. So, the permit limits are in compliance with antidegradation requirement set forth in 9 VAC 25-260-30.

15. **Site Inspection:** Date: 5/8/12 Performed by: Becky L. France
Attachment C contains a copy of the site inspection memorandum. The last technical and laboratory inspection was conducted on May 13, 2008 by Troy Nipper.

16. **Effluent Screening and Limitation Development:** DEQ Guidance Memo 00-2011 was used in developing all water quality based limits pursuant to water quality standards (9 VAC 25-260-5 et seq.). Refer to **Attachment F** for the wasteload allocation spreadsheet and effluent limit calculations. See **Table II** on page 12 for a summary of limits and monitoring requirements.

A. **Mixing Zone**

Effluent is discharged just below the tailrace of the dam into the Roanoke River 17 miles upstream of Leesville Dam. The receiving stream flow characteristics associated with the mixing zone calculations vary considerably depending upon whether Smith Mountain Dam is discharging water. According to company records, AEP generates power and/or pumps water back into the lake every day at the Smith Mountain Dam. Therefore, mixing is expected to occur daily during either power generation or pump back.

According to the permit reissuance application, the wastewater treatment system discharges intermittently averaging less than two hours. Therefore, in accordance with Guidance Memo 00-2011, only the acute wasteload allocation (WLA_a) has been addressed.

The MIXER program was run to determine the percentage of the receiving stream flow that could be used in the wasteload allocation calculations. The program output indicated that 1.57 percent of the 1Q10 may be used for calculating acute wasteload allocations (WLAs). A copy of the print out from the MIXER run is enclosed in **Attachment F**.

B. **Effluent Limitations for Conventional Pollutants**

Flow – The permitted design flow of 0.005 MGD for this facility is taken from the previous permit and the application for the reissuance. In accordance with the VPDES Permit Manual, flow is to be estimated and reported per discharge day.

pH – There were no exceedances of the pH limits during the months of November 2007 through May 2012 (**Attachment G**). The pH limits of 6.0 S.U. minimum and 9.0 S.U. maximum have been continued from the previous permit. These limits are based upon the water quality criteria in 9 VAC 25-260-50 for Class IV receiving waters and are in accordance with federal technology-based guidelines, 40 CFR Part 133, for secondary treatment. Grab samples shall be collected once per discharge day.

Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS) – All of the data during the months of April 2008 through April 2012 were significantly below the limits (**Attachment G**). BOD₅ and TSS are technology-based requirements for municipal dischargers with secondary treatment required in accordance with 40 CFR Part 133. These limits of 30 mg/L (570 g/d) monthly average and 45 mg/L (850 g/d) weekly average are the same as the previous permit. Grab samples shall continue to be collected. The VPDES Permit Manual recommends a monitoring frequency of 1/month for these parameters. In the previous permit term the facility qualified for a reduced monitoring

frequency. The data from the permit term were evaluated to determine if the facility qualifies for a reduced monitoring frequency. The reduced monitoring frequency of 1/6 months has been continued. Effluent data and details regarding the justification for continuing this reduced monitoring are found in **Attachment G**.

Fecal coliform— The application included 15 samples collected for fecal coliform, and the data were between < 2 MPN/100 mL and 4 MPN/100 mL. These values appear to demonstrate adequate disinfection. Since the permit contains chlorine disinfection limits and bacteria monitoring data were very low, *E. coli* monitoring has not been included in the permit.

C. **Effluent Limitations for Toxic Pollutants**

Ammonia as N -- The need for an ammonia limit has been reevaluated using revised water quality criteria and flows. The acute water quality criteria and wasteload allocations were calculated and are included in the spreadsheet in **Attachment F**. Since the facility discharges intermittently, only the acute wasteload allocation was input into the Agency's STATS program to determine if a limit is needed. As recommended in Guidance Memo 00-2011, a default ammonia concentration of 9 mg/L was input into the program. The program output indicates that a permit limit is not necessary for ammonia (**Attachment F**).

Total Residual Chlorine (TRC) -- As noted in Guidance Memo 00-2011, all chlorinated effluent must have a chlorine limit because there is a reasonable potential for the facility to cause or contribute to a violation of the standards. This Guidance Memo also recommends an upper, technology based wasteload allocation (WLA) of 4.0 mg/L where the chlorine limit, based solely on dilution, would be excessive. This 4.0 mg/L TRC value represents the 97 percentile of the distribution that must be attained. Guidance Memo 00-2011 directs that the upper, technology based limits are calculated by entering the acute WLA of 4.0 mg/L into the STATS program. The resulting program output monthly average and weekly average limits will ensure that 97 percent of the daily values will be below 4.0 mg/L.

The effluent limits are technology based limits. The previous permit limits of 1.9 mg/L monthly average and 2.3 mg/L weekly average have been reevaluated. The limits were calculated by entering the acute WLA of 4.0 mg/L into the STATS program. Using two significant figures the limits are rounded up to 2.0 mg/L monthly average and 2.4 mg/L weekly average. Since these limits are technology based limits, 9 VAC 25-31-10 L.2.b(2) and 40 CFR § 122.44 (1)i)(2), allows backsliding to correct a technical error. Therefore, the new limits are 2.0 mg/L monthly average and 2.4 mg/L weekly average. Monitoring shall be continued once per discharge day using grab samples. See **Attachment F** for a copy of the output from the STATS program.

17. **Basis for Sludge Use and Disposal Requirements:** Since the facility proposes to pump and haul septage to a POTW, there are no sludge limits or monitoring requirements.

18. **Antibacksliding Statement:** The technology based total residual chlorine limits are less stringent than the previous permit. In accordance with 9 VAC 25-31-220 L.2.b(2), and 40, CFR § 122.44 (l)(2), backsliding is allowed for technology based limits to correct a technical mistake. No other limits are less stringent than the previous permit. Therefore, the permit limits comply with the antibacksliding requirements of 9 VAC 25-31-220 L of the VPDES Permit Regulation.
19. **Compliance Schedules:** There are no compliance schedules included in this permit.
20. **Special Conditions:** A brief rationale for each special condition contained in the permit is given below.

A. **Additional Total Residual Chlorine (TRC) Limitations and Monitoring Requirements (Part I.B)**

Rationale: This condition requires that the permittee monitor the TRC concentration after chlorine contact. In accordance with 40 CFR 122.41 (e) permittees are required, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. It specifies *E. coli* limits when alternative disinfection methods are used. This condition is required by Sewerage Collection and Treatment Regulations, 9 VAC 25-790, bacteria standards. These requirements ensure proper operation of chlorination equipment to maintain adequate disinfection.

B. **Compliance Reporting (Part I.C.1)**

Rationale: In accordance with VPDES Permit Regulation, 9 VAC 25-31-190 J4 and 220 I, DEQ is authorized to establish monitoring methods and procedures to compile and analyze data on water quality, as per 40 CFR Part 130, Water Quality Planning and Management, Subpart 130.4. This condition is necessary when toxic pollutants are monitored by the permittee and a maximum level of quantification and/or specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. This condition also establishes protocols for calculation of reported values.

C. **95% Capacity Reopener (Part I.C.2)**

Rationale: This condition requires that the permittee address problems resulting from high influent flows, in a timely fashion, to avoid non-compliance and water quality problems from plant overloading. This requirement is contained in 9 VAC 25-31-200 B4 of the VPDES Permit Regulations and applies to all POTWs and PVOTWs.

D. **CTC, CTO Requirement (Part I.C.3)**

Rationale: This condition is required by Code of Virginia § 62.1-44.19 and the Sewage Collection and Treatment Regulations, 9 VAC 25-790.

E. Operation and Maintenance Manual Requirement (Part I.C.4)

Rationale: An Operations and Maintenance Manual is required by the Code of Virginia Section 62.1-44.19; the Sewage Collection and Treatment Regulations, 9 VAC 25-790; and the VPDES Permit Regulation, 9 VAC 25-31-190 E.

F. Reliability Class (Part I.C.5)

Rationale: Reliability class designations are required by Sewage Collection and Treatment Regulations, 9 VAC 25-790 for all municipal facilities. Facilities are required to achieve a certain level of reliability to protect water quality and public health in the event of component or system failure. A Reliability Class III has been assigned to this facility.

G. Sludge Reopener (Part I.C.6)

Rationale: This condition is required by VPDES Permit Regulation, 9 VAC 25-31-220 C for all permits issued to treatment works treating domestic sewage to allow incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the Clean Water Act.

H. Effluent Monitoring Frequencies (Part I.C.7)

Rationale: Permittees are granted a reduction in monitoring frequency based on a history of permit compliance. If facilities fail to maintain the previous levels of performance, then normal monitoring frequencies should be reinstated.

I. Total Maximum Daily load (TMDL) Reopener (Part I.C.8)

Rationale: Section 303(d) of the Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to Section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under Section 303 of the Act.

J. Treatment Works Closure Plan (Part I.C.9)

Rationale: In accordance with State Water Control Law § 62.1-44.19, this condition is used to notify the owner of the need for a closure plan where a treatment works is being replaced or is expected to close.

K. Permit Application Requirement (Part I.C.10)

Rationale: VPDES Permit Regulation, 9 VAC 25-31-100.D and 40 CFR 122.21(d)(1) require submission of a new application at least 180 days prior to expiration of the existing permit. In addition, the VPDES Permit Regulation, 9 VAC 25-31-100 E.1 and 40 CFR 122.21 (e)(1) note that a permit shall not be issued before receiving a complete application.

L. Conditions Applicable to All VPDES Permits (Part II)

Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

21. Changes to the Permit:**A. Special conditions that have been modified from the previous permit are listed below: (The referenced permit sections are for the new permit.)**

1. The Additional Total Residual Chlorine Limitations and Monitoring Requirements Special Condition (Part I.B) has been modified to reflect changes in the Water Quality Standards.
2. The Compliance Reporting Special Condition (Part I.C.1) has been revised to include information about significant figures.
3. The O&M Manual Special Condition (Part I.C.4) has been revised in accordance with the VPDES Permit Manual.
4. Part II - Conditions Applicable to All VPDES Permits has been revised to include the requirement that samples be analyzed by a VELAP certified laboratory.

B. A new special condition added to the permit is listed below:

A Permit Application Requirement Special Condition (Part I.C.10) has been added to remind the permittee of the requirement to submit a reissuance application six months prior to the expiration of the permit.

C. Permit Limits and Monitoring Requirements: See Table III on page 13 for changes to the effluent limits and monitoring requirements.

- 22. Variances/Alternate Limits or Conditions:** No variances or alternate limits or conditions are included in this permit. A waiver was requested to allow that grab samples for TSS and BOD₅ required by the permit, be recorded on the application in lieu of composite samples. These waivers have been granted.

23. **Regulation of Treatment Works Users:** VPDES Permit Regulation 9 VAC 25-31-280 B9 requires that every permit issued to a treatment works owned by a person other than a state or municipality provide an explanation of the Board's decision on the regulation of users. There are no industrial users contributing to the treatment works.
24. **Public Notice Information required by 9 VAC 25-31-280 B:**

All pertinent information is on file and may be inspected, and arrangements made for copying by contacting Becky L. France at:

Virginia DEQ, Blue Ridge Regional Office
3019 Peters Creek Road
Roanoke, VA 24019
540-562-6700
becky.france@deq.virginia.gov

Persons may comment in writing or by e-mail to the DEQ on the proposed permit action and may request a public hearing during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for the comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state (1) the reason why a hearing is requested; (2) a brief informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and (3) specific references, where possible, to terms and conditions of the permit with suggested revisions.

Following the comment period, the DEQ will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may review the draft permit and application at the Blue Ridge Regional Office in Roanoke by appointment. A copy of the public notice is found in **Attachment H**.

25. **303(d) Listed Segments (TMDL):** This facility discharges directly to the Roanoke River. The stream segment receiving the effluent is not listed on the current 303(d) list; and therefore no Total Maximum Daily Loads (TMDLs) have been or are being developed for this segment.
26. **Additional Comments:**
- A. **Previous Board Action:** None
 - B. **Staff Comments:** The discharge is not controversial. The discharge is not address in any planning document, but will be included, if applicable, when the plan is updated.

C. **Public Comments:** No comments were received during the public comment period.

D. **Tables:**

Table I	Discharge Description (Page 2)
Table II	Basis for Monitoring Requirements (Page 12)
Table III	Permit Processing Change Sheet (Page 13)

E. **Attachments:**

- A. Flow Frequency Memorandum
- B. Wastewater Schematic
- C. Site Inspection Report
- D. USGS Topographic Map
- E. Ambient Water Quality Information
 - STORET Data (Station 9AROA158.22)
- F. Wasteload and Limit Calculations
 - Mixing Zone Calculations (MIXER 2.1)
 - Effluent pH Data
 - Wasteload Allocation Spreadsheet
 - STATS Program Results
- G. Reduced Monitoring Frequency Information
 - Reduced Monitoring Evaluation Memorandum
 - Permittee Response to TRC Exceedances
- H. Public Notice
- I. EPA Review Checksheet

Table II
BASIS FOR LIMITATIONS – MUNICIPAL

() Interim Limitations
(x) Final Limitations

OUTFALL: 001
DESIGN CAPACITY: 0.005 MGD

Effective Dates - From: Effective Date
To: Expiration Date

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency*	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/D-Day	Estimate
pH (Standard Units)	1,2	NA	NA	6.0	9.0	1/D-Day	Grab
BOD ₅	1	30 mg/L 570 g/d	45 mg/L 850 g/d	NA	NA	1/ 6 Months	Grab
Total Suspended Solids	1	30 mg/L 570 g/d	45 mg/L 850 g/d	NA	NA	1/ 6 Months	Grab
Total Residual Chlorine	3	2.0 mg/L	2.4 mg/L	NA	NA	1/D-Day	Grab

NA = Not Applicable

1/D-Day = once per day of discharge

NL = No Limitations; monitoring only

*See Part I.D.7 for additional instructions regarding monitoring frequencies.

The basis for the limitations codes are:

1. Federal Technology-Based Secondary Treatment Regulation (40 CFR Part 133)
2. Water Quality Criteria
3. Best Professional Judgment

Table III
PERMIT PROCESSING CHANGE SHEET

LIMITS AND MONITORING SCHEDULE:

Outfall No.	Parameter Changed	Monitoring Requirement Changed		Effluent Limits Changed		Reason for Change	Date
		From	To	From	To		
001	Total Residual Chlorine			1.9 mg/L monthly average; 2.3 mg/L weekly average	2.0 mg/L monthly average; 2.4 mg/L weekly average	STATS program output has been rounded up to provide two significant figures. Backsliding is allowed for technology based limits to correct technical mistake.	6/25/12

Attachment A

Flow Frequency Memorandum

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
3019 Peters Creek Road, Roanoke, Virginia 24017

SUBJECT: Flow Frequency Determination
Smith Mountain Dam Visitor's Center WWTP – Reissuance (VA0074179)

TO: Permit File

FROM: Becky L. France, Water Permit Writer *BLF*

DATE: June 5, 2012

Smith Mountain Dam Visitor's Center discharges to the Roanoke River below the Smith Mountain Dam near Penhook, Virginia. Stream flow frequencies are required at this site to develop effluent limitations for the VPDES permit.

The USGS has operated a continuous record gauge on the Roanoke River at Altavista, VA (#02060500) since 1930. The flow at the gauge has been regulated by both the Leesville Lake and Smith Mountain Lake since 1965. The flow frequencies for the gauge are based on the regulated period of record from 1966 to the present. The gauge is located at the U.S. Route 29 bridge near Altavista, VA. Between the gauge and the Leesville Lake dam, Goose Creek enters the Roanoke River. DEQ operates a continuous record gauge on Goose Creek near Huddleston, VA (#02059500). The flow frequencies and drainage area for this gauge were subtracted from the values for the Altavista gauge and the difference was projected to the discharge point using proportional drainage area. The flow frequencies assume there are no significant withdrawals, discharges, or springs lying between the gauge and the outfall upstream.

Subtracting the Goose Creek contribution from the Altavista flow frequencies and projecting the difference to the discharge point yields the flow below the discharge point. The high flow months are January through May.

SITEID	Name	Record	DA	Har mean	HF30Q10	HF7Q10	HF1Q10	Z30Q5	Z30Q10	Z7Q10	Z1Q10	Z1Q30	Hr mths	Stat period	Yr sum	Notes
02060500	Roanoke River at Altavista, VA	R, 1930-	1,789	744	603	538	141	566	487	415	78	50	JAN-MAY	1966-2003	2005	Regulated since Oct 1965 by Smith Mt Lake
02059500	Goose Creek near Huddleston, VA	R, 1931-	188	87	66	52	44	34	27	20	17	11	JAN-MAY	1930-2003	2005	

Flow Frequency Determination: Smith Mountain Dam Visitor's Center

Reference Gauge (data from 1966 to 2003)					
Roanoke River at Altavista, VA (#02060500)					
Drainage Area [mi ²] =		1,789			
	ft ³ /s	MGD		ft ³ /s	MGD
1Q10 =	78	50	High Flow 1Q10 =	141	91
7Q10 =	415	268	High Flow 7Q10 =	538	348
30Q5 =	566	366	HM =	744	481
30Q10 =	487	315	High Flow 30Q10 =	603	390

Reference Gauge (data from 1930-2003)					
Goose Creek near Huddleston, VA (#02059500)					
Drainage Area [mi ²] =		188			
	ft ³ /s	MGD		ft ³ /s	MGD
1Q10 =	17	11	High Flow 1Q10 =	44	28
7Q10 =	20	13	High Flow 7Q10 =	52	34
30Q5 =	34	22	HM =	87	56
30Q10 =	27	17	High Flow 30Q10 =	66	43

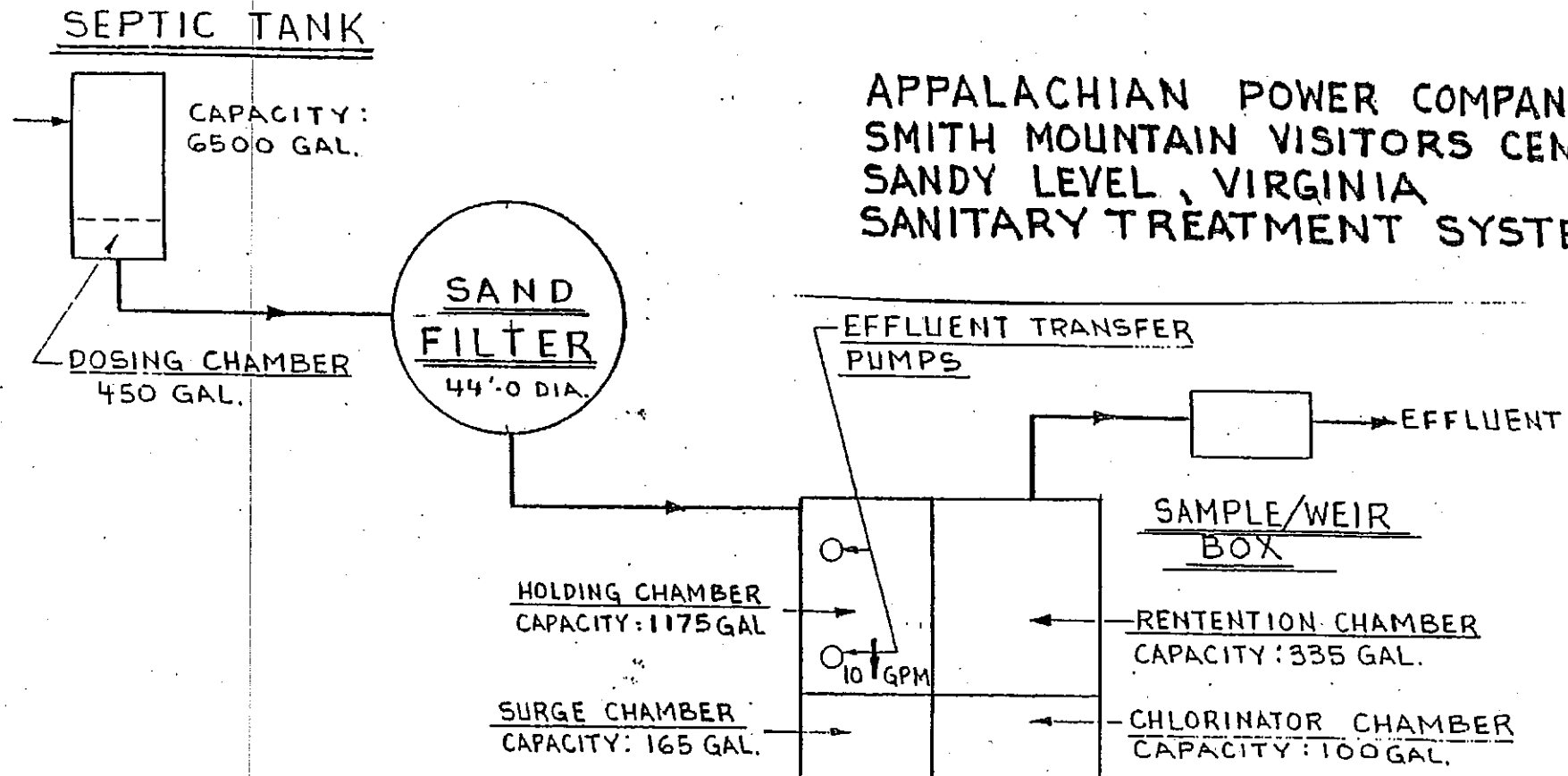
Subtracting the Goose Creek contribution from the Altavista flow frequencies and projecting the difference to the discharge point.

Flow frequencies for the 2007 reissuance permit					
Roanoke River at Discharge Point					
Drainage Area [mi ²] =		1,024			
	ft ³ /s	MGD		ft ³ /s	MGD
1Q10 =	39	25	High Flow 1Q10 =	62	40
7Q10 =	253	163	High Flow 7Q10 =	311	201
30Q5 =	340	220	HM =	420	272
30Q10 =	294	190	High Flow 30Q10 =	343	222

Attachment B

Wastewater Schematic

APPALACHIAN POWER COMPANY
SMITH MOUNTAIN VISITORS CENTER
SANDY LEVEL, VIRGINIA
SANITARY TREATMENT SYSTEM



HOLDING CHAMBER /
CHLORINE CONTACT TANK

FLOW DIAGRAM

Attachment C

Site Inspection Report

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY *Blue Ridge Regional Office*

3019 Peters Creek Road

Roanoke, VA 24019

SUBJECT: Site Visit Report for Smith Mountain Dam Visitor's Center
Reissuance of VPDES Permit No. VA0074179

TO: Permit File

FROM: Becky L. France, Water Permit Writer *BLF*

DATE: May 14, 2012

On May 8, 2012, a site inspection was conducted of the wastewater works at the Smith Mountain Dam Visitor's Center. Richard Haley, Environmental Coordinator, April Looney, Environmental Coordinator, and Rosemary Berger, Senior Visitor's Center Attendant were present at the inspection. The Smith Mountain Dam Visitor's Center overlooks the Smith Mountain Dam and is located at the end of State Route 908 in Bedford County, Virginia. There are two drinking water wells on site, one at the picnic area and the other one serves the visitor's center. The visitor's center is open (9-5) on Tuesday through Friday and half a day (1-5) on Sunday from Memorial Day to Labor Day.

Location of Discharge/ Description of Receiving Waters

Effluent is discharged from a 4-inch PVC pipe at the top of a steep rocky ledge to the Roanoke River below Smith Mountain Dam. This effluent flows down the rocky cliff over some vegetation at the top and down a steep rock face toward the river. The Roanoke River channel width at the point of discharge is over 200 feet. The river is deep with a steep rocky bank and fairly straight channel.

Location of Nearby Discharges

The nearest upstream discharger is Smith Mountain Dam which is permitted to discharge non-contact cooling water at the tailrace of the dam. The nearest downstream discharge is from the Leesville Dam.

Determination of Stream Uses

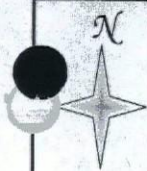
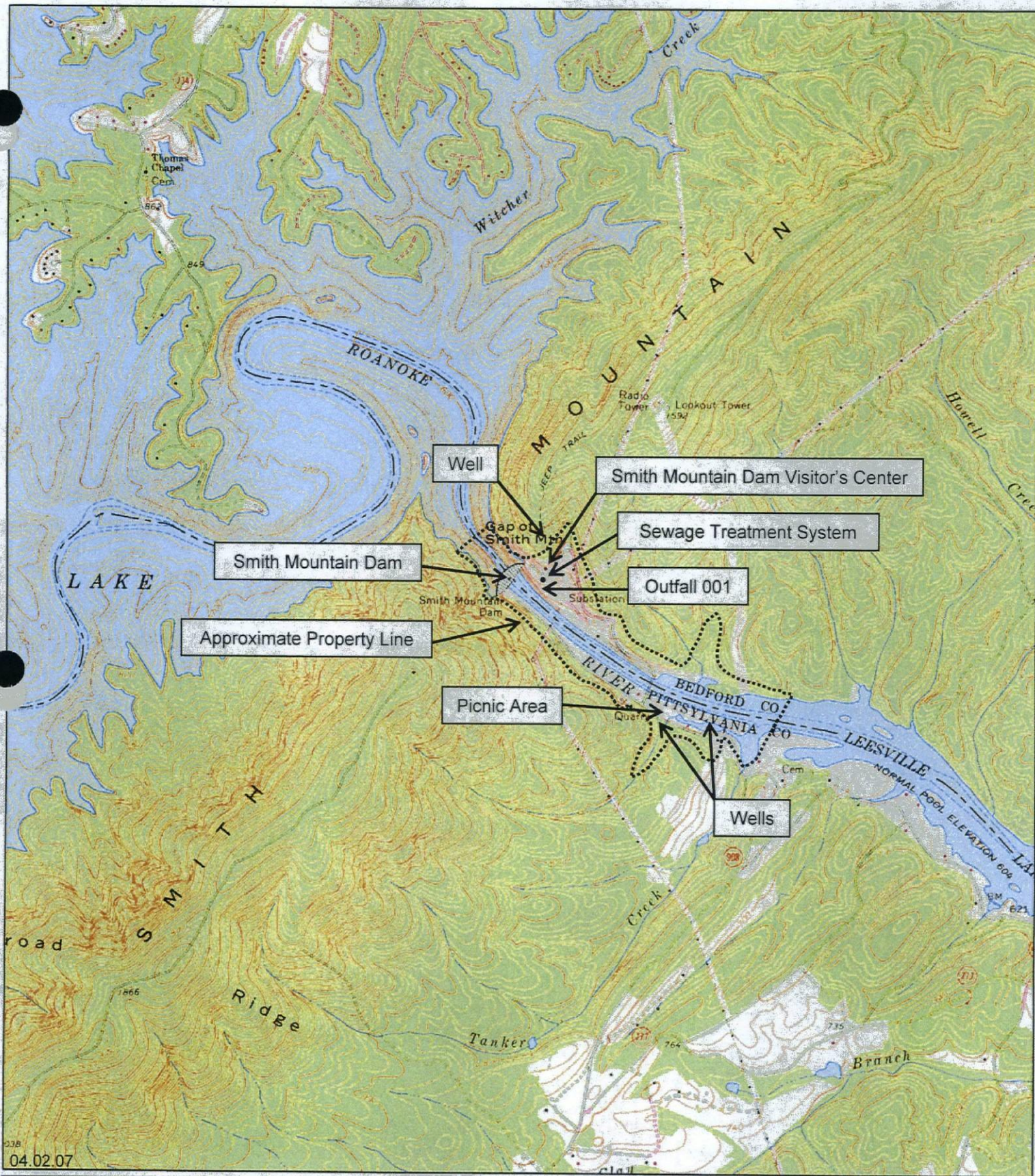
The Roanoke River is used for hydroelectric power generation and is designated as a public water supply. The nearest public water supply is in Altavista, Virginia. Smith Mountain Dam is a pump storage facility that generates power during peak electricity hours and pumps water back into Smith Mountain Lake during low electricity loads. Leesville Dam, located 17 miles downstream, is designed to operate on an auto cycle to discharge water for several minutes every hour to meet a weekly minimum flow requirement of 650 cfs. Power generating at Smith Mountain Dam and Leesville Dam is controlled by AEP's Roanoke office.

Familiarization with Plant Operations

Wastewater from two public restrooms at the visitor's center is treated by a septic tank with sand filter and tablet chlorinator. Wastewater from the septic tank is siphoned from the dosing chamber to a rotary arm sand filter. At the time of the inspection, the sand filter was clean and free of plant growth. No ponding was evident. Sand filter underflow is routed to a 1,175-gallon holding chamber equipped with two submersible effluent transfer pumps and two float switches. Floats in the holding chamber set off an audible alarm system that alerts personnel that a discharge is needed. Staff is on duty daily to respond to the alarm. Wastewater is manually transferred as a batch operation to a 165-gallon surge chamber. Wastewater from the surge chamber is routed through a tablet chlorinator into the chlorine contact chamber for a 30-minute detention time. One of the two tablet chlorinator tubes was in use at the time of the site visit. The tablets appeared to be at a level which would contact the wastewater. Chlorinated effluent then flows to a retention chamber and then to a weir/sample box prior to discharge. TSS, BOD₅, and pH are monitored from the weir box prior to discharge. Total residual chlorine is monitored following the chlorine contact chamber. Flow is determined by measuring the level in the holding chamber. At the time of the site visit, there was no discharge from the system.

Attachment D

USGS Topographic Map



Smith Mountain Dam
Quadrangle
USGS Topographic Map

0 1/2 1mi

Appalachian Power Company Smith Mountain Dam Visitor's Center Site Map

Sewage Treatment System Latitude: 37° 02' 28"
Sewage Treatment System Longitude: 79° 32' 02"

Water & Ecological
Resource Services



Attachment E

Ambient Water Quality Information

- **STORET Data (Station 4AROA158.22)**

4AROA158.22

Smith Mountain Lake

VAW-L12L

Collection Date Time	Hardness, Total (mg/L as CaCO ₃)
4/29/1997 13:00	71.3
6/11/1997 12:00	75.4
8/6/1997 12:00	72.4
10/7/1997 12:00	77.7
4/28/1998 12:00	64.4
6/23/1998 12:00	66.9
9/28/1998 13:00	75.7
10/29/1998 13:00	74
5/25/1999 12:00	72
6/15/1999 12:00	76.3
7/22/1999 12:00	82.9
8/17/1999 12:00	80.5
9/30/1999 14:00	71.4
10/21/1999 14:00	76.7
4/19/2000 13:00	72
5/18/2000 13:30	75
6/27/2000 13:00	72.9
10/17/2000 12:00	74.3
4/23/2001 13:00	50.9
5/24/2001 10:00	74.5
6/19/2001 13:00	65.6
7/18/2001 13:00	70.6
8/21/2001 13:00	65.8
9/18/2001 13:00	68.1
10/22/2001 12:30	49.2
4/17/2002 12:00	55.9
5/28/2002 12:30	72.2
6/12/2002 12:00	63.7
7/9/2002 12:00	88.7
8/20/2002 11:30	65.9
9/17/2002 11:30	69.9
4/28/2003 12:30	66
6/10/2003 12:00	64.3

mean

70.4

4AROA158.22
VAW-L12L

Smith Mountain Lake

Collection Date Time	Temp Celsius	pH (S.U.)
4/26/2007 12:30	13.9	8.2
4/26/2007 12:45	8.3	7.5
5/23/2007 12:00	18.8	8.2
5/23/2007 12:15	9.6	7.5
6/14/2007 12:45	22.3	8.3
6/14/2007 13:00	11.6	7.8
7/9/2007 12:30	27.2	8.2
7/9/2007 12:45	14	7.6
8/21/2007 12:30	26.7	7.8
8/21/2007 12:45	18.7	7
9/10/2007 12:00	26.3	8.2
9/10/2007 12:15	19.6	7
4/23/2008 12:00	14.1	8
4/23/2008 12:15	8.5	7.2
5/22/2008 12:00	18.5	8.2
5/22/2008 12:15	9.8	7.1
6/3/2008 12:30	22.7	8.1
6/3/2008 12:45	11.1	7
7/14/2008 13:00	26.3	8
7/14/2008 13:15	15.6	6.8
8/12/2008 13:00	24.9	7.9
8/12/2008 13:15	17.6	7
9/24/2008 13:00	21.6	7.6
9/24/2008 13:15	20.3	7.2
10/14/2008 13:30	20.3	7.7
10/14/2008 13:45	19.9	7.4
4/28/2009 13:30	18.4	8.3
4/28/2009 13:45	6.7	7.6
5/20/2009 13:00	19.7	8.6
5/20/2009 13:15	8.4	7.6
6/2/2009 13:00	24.9	8.5
6/2/2009 13:30	8.1	7.4
7/16/2009 13:30	26.2	8.5
7/16/2009 13:45	11.3	6.9
8/25/2009 12:15	25.6	8.5
8/25/2009 12:30	17	7.3
9/3/2009 12:30	23.4	8.4
9/3/2009 12:45	17.1	7.1
10/22/2009 13:00	18	7.5
10/22/2009 13:15	17.6	7.1
4/14/2010 13:30	13.1	8
4/14/2010 13:45	7	7.4
5/25/2010 12:45	21	8.7
5/25/2010 13:00	10.3	7.4
6/2/2010 12:30	25.1	8.3
6/2/2010 12:45	9.1	7.3
7/22/2010 12:30	27.4	8.3
7/22/2010 12:45	14.9	7.2
8/9/2010 13:00	27.6	9.3
8/9/2010 13:15	16.1	7.1
9/9/2010 12:30	25	8.2
9/9/2010 12:45	18.9	6.9
4/19/2011 13:00	13	7.6
4/19/2011 13:15	7.2	7.3

4AROA158.22
VAW-L12L

Smith Mountain Lake

Collection Date Time	Temp Celsius	pH (S.U.)
5/9/2011 13:00	19.6	8.1
5/9/2011 13:15	8.6	6.9
6/7/2011 13:00	26.4	8.4
6/7/2011 13:15	12.4	7.3
7/12/2011 13:00	28.7	8.4
7/12/2011 13:15	14.6	7.2
8/3/2011 13:00	29.7	8.3
8/3/2011 13:15	15.6	7
9/27/2011 13:00	22.4	8.1
9/27/2011 13:15	19.2	7.1
10/26/2011 12:30	18.7	7.6
10/26/2011 12:45	18.4	7.4

90th Percentile pH	8.4	
10th Percentile pH	7.0	
90th Percentile Temp	26.4	
90th Percentile Temp	19.6	Jan. - May

Attachment F

Wasteload and Limit Calculations

- **Mixing Zone Calculations (MIXER 2.1)**
- **Effluent Data**
- **Wasteload Allocation Spreadsheet**
- **STATS Program Results**

Mixing Zone Predictions for

Smith Mountain Dam Visitor's Center

Effluent Flow = 0.005 MGD
Stream 7Q10 = 163 MGD
Stream 30Q10 = 190 MGD
Stream 1Q10 = 25 MGD
Stream slope = 0.0001 ft/ft
Stream width = 225 ft
Bottom scale = 4
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 4.1683 ft
Length = 11282.2 ft
Velocity = .269 ft/sec
Residence Time = .4853 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 4.5762 ft
Length = 10413.43 ft
Velocity = .2857 ft/sec
Residence Time = .4219 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 1.3403 ft
Length = 29521.34 ft
Velocity = .1284 ft/sec
Residence Time = 63.8869 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 1.57% of the 1Q10 is used.

Smith Mountain Dam Visitor's Center WWTP (VA0074179)

Effluent pH Data

Date	Min	Max
10-Dec-07	7	7
10-Jan-08	7	7
10-Feb-08	7	7
10-Mar-08	7	7
10-Apr-08	7	7
10-May-08	7	7
10-Jun-08	7	7
10-Jul-08	7	7
10-Aug-08	7	7
10-Sep-08	7	7
10-Oct-08	7	7
10-Nov-08	7	7
10-Dec-08	7	7
10-Jan-09	7	7
10-Feb-09	7	7
10-Mar-09	7	7
10-Apr-09	7	7
10-May-09	7	7
10-Jun-09	7	7
10-Jul-09	7	7
10-Aug-09	7	7
10-Sep-09	7	7
10-Oct-09	7	7
10-Nov-09	7	7
10-Dec-09	7	7
10-Jan-10	7	7
10-Feb-10	7	7
10-Mar-10	7	7
10-Apr-10	7	7
10-May-10	7	7
10-Jun-10	7	7
10-Jul-10	7	7
10-Aug-10	7	7
10-Sep-10	7	7
10-Oct-10	7	7
10-Nov-10	7	7
10-Dec-10	7	7
10-Jan-11	7	7
10-Feb-11	7	7
10-Mar-11	7	7
10-Apr-11	7	7
10-May-11	7	7
10-Jun-11	7	7
10-Jul-11	7	7
10-Aug-11	7	7
10-Sep-11	6.5	7
10-Oct-11	6.9	7
10-Nov-11	7	7
10-Dec-11	7	7
10-Jan-12	7	7
10-Feb-12	7	7
10-Mar-12	7	7
10-Apr-12	7	7
10-May-12	7	7
10-Jun-12	7	7

10th Percentile pH

7

90th Percentile pH

7

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: **Smith Mountain Dam Visitor's Center**

Permit No.: **VA0074179**

Receiving Stream: **Roanoke River**

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	70.4 mg/L
90% Temperature (Annual) =	26.4 deg C
90% Temperature (Wet season) =	19.6 deg C
90% Maximum pH =	8.4 SU
10% Maximum pH =	7 SU
Tier Designation (1 or 2) =	2
Public Water Supply (PWS) Y/N? =	n
Trout Present Y/N? =	n
Early Life Stages Present Y/N? =	y

Stream Flows

1Q10 (Annual) =	25 MGD
7Q10 (Annual) =	163 MGD
30Q10 (Annual) =	190 MGD
1Q10 (Wet season) =	40 MGD
30Q10 (Wet season) =	222 MGD
30Q5 =	220 MGD
Harmonic Mean =	272 MGD

Mixing Information

Annual - 1Q10 Mix =	1.57 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	100 %
- 30Q10 Mix =	100 %

Effluent Information

Mean Hardness (as CaCO3) =	70.4
90% Temp (Annual) =	26.4
90% Temp (Wet season) =	19.6
90% Maximum pH =	7
10% Maximum pH =	7
Discharge Flow =	0.005

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocation		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Acenaphthene	0	--	--	na	9.9E+02	--	--	na	4.4E+07	--	--	na	9.9E+01	--	--	na	4.4E+06	--	--	na
Acrolein	0	--	--	na	9.3E+00	--	--	na	4.1E+05	--	--	na	9.3E-01	--	--	na	4.1E+04	--	--	na
Acrylonitrile ^C	0	--	--	na	2.5E+00	--	--	na	1.4E+05	--	--	na	2.5E-01	--	--	na	1.4E+04	--	--	na
Aldrin ^C	0	3.0E+00	--	na	5.0E-04	2.4E+02	--	na	2.7E+01	7.5E-01	--	na	5.0E-05	3.8E+03	--	na	2.7E+00	2.4E+02	--	na
Ammonia-N (mg/l) (Yearly)	0	4.88E+00	6.00E-01	na	--	3.86E+02	2.28E+04	na	--	9.75E-01	1.50E-01	na	--	4.87E+03	5.70E+03	na	--	3.86E+02	5.70E+03	na
Ammonia-N (mg/l) (High Flow)	0	3.89E+00	9.30E-01	na	--	3.11E+04	4.13E+04	na	--	9.73E-01	2.32E-01	na	--	7.79E+03	1.03E+04	na	--	7.79E+03	1.03E+04	na
Anthracene	0	--	--	na	4.0E+04	--	--	na	1.8E+09	--	--	na	4.0E+03	--	--	na	1.8E+08	--	--	na
Antimony	0	--	--	na	6.4E+02	--	--	na	2.8E+07	--	--	na	6.4E+01	--	--	na	2.8E+06	--	--	na
Arsenic	0	3.4E+02	1.5E+02	na	--	2.7E+04	4.9E+06	na	--	8.5E+01	3.8E+01	na	--	4.3E+05	1.2E+06	na	--	2.7E+04	1.2E+06	na
Barium	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Benzene ^C	0	--	--	na	5.1E+02	--	--	na	2.8E+07	--	--	na	5.1E+01	--	--	na	2.8E+06	--	--	na
Benzidine ^C	0	--	--	na	2.0E-03	--	--	na	1.1E+02	--	--	na	2.0E-04	--	--	na	1.1E+01	--	--	na
Benzo (a) anthracene ^C	0	--	--	na	1.8E-01	--	--	na	9.8E+03	--	--	na	1.8E-02	--	--	na	9.8E+02	--	--	na
Benzo (b) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	9.8E+03	--	--	na	1.8E-02	--	--	na	9.8E+02	--	--	na
Benzo (k) fluoranthene ^C	0	--	--	na	1.8E-01	--	--	na	9.8E+03	--	--	na	1.8E-02	--	--	na	9.8E+02	--	--	na
Benzo (a) pyrene ^C	0	--	--	na	1.8E-01	--	--	na	9.8E+03	--	--	na	1.8E-02	--	--	na	9.8E+02	--	--	na
Bis(2-Chloroethyl) Ether ^C	0	--	--	na	5.3E+00	--	--	na	2.9E+05	--	--	na	5.3E-01	--	--	na	2.9E+04	--	--	na
Bis(2-Chloroisopropyl) Ether	0	--	--	na	6.5E+04	--	--	na	2.9E+09	--	--	na	6.5E+03	--	--	na	2.9E+08	--	--	na
Bis 2-Ethylhexyl Phthalate ^C	0	--	--	na	2.2E+01	--	--	na	1.2E+06	--	--	na	2.2E+00	--	--	na	1.2E+05	--	--	na
Bromoform ^C	0	--	--	na	1.4E+03	--	--	na	7.6E+07	--	--	na	1.4E+02	--	--	na	7.6E+06	--	--	na
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	8.4E+07	--	--	na	1.9E+02	--	--	na	8.4E+06	--	--	na
Cadmium	0	2.6E+00	8.6E-01	na	--	2.1E+02	2.8E+04	na	--	6.6E-01	2.2E-01	na	--	3.3E+03	7.0E+03	na	--	2.1E+02	7.0E+03	na
Carbon Tetrachloride ^C	0	--	--	na	1.6E+01	--	--	na	8.7E+05	--	--	na	1.6E+00	--	--	na	8.7E+04	--	--	na
Chlordane ^C	0	2.4E+00	4.3E-03	na	8.1E-03	1.9E+02	1.4E+02	na	4.4E+02	6.0E-01	1.1E-03	na	8.1E-04	3.0E+03	3.5E+01	na	4.4E+01	1.9E+02	3.5E+01	na
Chloride	0	8.6E+05	2.3E+05	na	--	6.8E+07	7.5E+09	na	--	2.2E+05	5.8E+04	na	--	1.1E+09	1.9E+09	na	--	6.8E+07	1.9E+09	na
TRC	0	1.9E+01	1.1E+01	na	--	1.5E+03	3.6E+05	na	--	4.8E+00	2.8E+00	na	--	2.4E+04	9.0E+04	na	--	1.5E+03	9.0E+04	na
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	7.0E+07	--	--	na	1.6E+02	--	--	na	7.0E+06	--	--	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocation:		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Chlorodibromomethane ^C	0	--	--	na	1.3E+02	--	--	na	7.1E+06	--	--	na	1.3E+01	--	--	na	7.1E+05	--	--	na
Chloroform	0	--	--	na	1.1E+04	--	--	na	4.8E+08	--	--	na	1.1E+03	--	--	na	4.8E+07	--	--	na
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	7.0E+07	--	--	na	1.6E+02	--	--	na	7.0E+06	--	--	na
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	6.6E+06	--	--	na	1.5E+01	--	--	na	6.6E+05	--	--	na
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	6.6E+00	1.3E+03	na	--	2.1E-02	1.0E-02	na	--	1.0E+02	3.3E+02	na	--	6.6E+00	3.3E+02	na
Chromium III	0	4.3E+02	5.6E+01	na	--	3.4E+04	1.8E+06	na	--	1.1E+02	1.4E+01	na	--	5.3E+05	4.5E+05	na	--	3.4E+04	4.5E+05	na
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.3E+03	3.6E+05	na	--	4.0E+00	2.8E+00	na	--	2.0E+04	9.0E+04	na	--	1.3E+03	9.0E+04	na
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	1.0E+01	--	--	--	4.4E+05	--	--	--	na
Chrysene ^C	0	--	--	na	1.8E-02	--	--	na	9.8E+02	--	--	na	1.8E-03	--	--	na	9.8E+01	--	--	na
Copper	0	9.7E+00	6.6E+00	na	--	7.7E+02	2.2E+05	na	--	2.4E+00	1.7E+00	na	--	1.2E+04	5.4E+04	na	--	7.7E+02	5.4E+04	na
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	1.7E+03	1.7E+05	na	7.0E+08	5.5E+00	1.3E+00	na	1.6E+03	2.8E+04	4.2E+04	na	7.0E+07	1.7E+03	4.2E+04	na
DDD ^C	0	--	--	na	3.1E-03	--	--	na	1.7E+02	--	--	na	3.1E-04	--	--	na	1.7E+01	--	--	na
DDE ^C	0	--	--	na	2.2E-03	--	--	na	1.2E+02	--	--	na	2.2E-04	--	--	na	1.2E+01	--	--	na
DDT ^C	0	1.1E+00	1.0E-03	na	2.2E-03	8.7E+01	3.3E+01	na	1.2E+02	2.8E-01	2.5E-04	na	2.2E-04	1.4E+03	8.2E+00	na	1.2E+01	8.7E+01	8.2E+00	na
Demeton	0	--	1.0E-01	na	--	--	3.3E+03	na	--	--	2.5E-02	na	--	--	8.2E+02	na	--	--	8.2E+02	na
Diazinon	0	1.7E-01	1.7E-01	na	--	1.4E+01	5.5E+03	na	--	4.3E-02	4.3E-02	na	--	2.1E+02	1.4E+03	na	--	1.4E+01	1.4E+03	na
Dibenz(a,h)anthracene ^C	0	--	--	na	1.8E-01	--	--	na	9.8E+03	--	--	na	1.8E-02	--	--	na	9.8E+02	--	--	na
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	5.7E+07	--	--	na	1.3E+02	--	--	na	5.7E+06	--	--	na
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	4.2E+07	--	--	na	9.6E+01	--	--	na	4.2E+06	--	--	na
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	8.4E+06	--	--	na	1.9E+01	--	--	na	8.4E+05	--	--	na
3,3-Dichlorobenzidine ^C	0	--	--	na	2.8E-01	--	--	na	1.5E+04	--	--	na	2.8E-02	--	--	na	1.5E+03	--	--	na
Dichlorobromomethane ^C	0	--	--	na	1.7E+02	--	--	na	9.2E+06	--	--	na	1.7E+01	--	--	na	9.2E+05	--	--	na
1,2-Dichloroethane ^C	0	--	--	na	3.7E+02	--	--	na	2.0E+07	--	--	na	3.7E+01	--	--	na	2.0E+06	--	--	na
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	3.1E+08	--	--	na	7.1E+02	--	--	na	3.1E+07	--	--	na
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	4.4E+08	--	--	na	1.0E+03	--	--	na	4.4E+07	--	--	na
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	1.3E+07	--	--	na	2.9E+01	--	--	na	1.3E+06	--	--	na
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
1,2-Dichloropropane ^C	0	--	--	na	1.5E+02	--	--	na	8.2E+06	--	--	na	1.5E+01	--	--	na	8.2E+05	--	--	na
1,3-Dichloropropene ^C	0	--	--	na	2.1E+02	--	--	na	1.1E+07	--	--	na	2.1E+01	--	--	na	1.1E+06	--	--	na
Dieldrin ^C	0	2.4E-01	5.6E-02	na	5.4E-04	1.9E+01	1.8E+03	na	2.9E+01	6.0E-02	1.4E-02	na	5.4E-05	3.0E+02	4.6E+02	na	2.9E+00	1.9E+01	4.6E+02	na
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	1.9E+09	--	--	na	4.4E+03	--	--	na	1.9E+08	--	--	na
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	3.7E+07	--	--	na	8.5E+01	--	--	na	3.7E+06	--	--	na
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	4.8E+10	--	--	na	1.1E+05	--	--	na	4.8E+09	--	--	na
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	2.0E+08	--	--	na	4.5E+02	--	--	na	2.0E+07	--	--	na
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	2.3E+08	--	--	na	5.3E+02	--	--	na	2.3E+07	--	--	na
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	1.2E+07	--	--	na	2.8E+01	--	--	na	1.2E+06	--	--	na
2,4-Dinitrotoluene ^C	0	--	--	na	3.4E+01	--	--	na	1.8E+06	--	--	na	3.4E+00	--	--	na	1.8E+05	--	--	na
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	2.2E-03	--	--	na	5.1E-09	--	--	na	2.2E-04	--	--	na
1,2-Diphenylhydrazine ^C	0	--	--	na	2.0E+00	--	--	na	1.1E+05	--	--	na	2.0E-01	--	--	na	1.1E+04	--	--	na
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	1.7E+01	1.8E+03	na	3.9E+06	5.5E-02	1.4E-02	na	8.9E+00	2.8E+02	4.6E+02	na	3.9E+05	1.7E+01	4.6E+02	na
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	1.7E+01	1.8E+03	na	3.9E+06	5.5E-02	1.4E-02	na	8.9E+00	2.8E+02	4.6E+02	na	3.9E+05	1.7E+01	4.6E+02	na
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	1.7E+01	1.8E+03	--	--	5.5E-02	1.4E-02	--	--	2.8E+02	4.6E+02	--	--	1.7E+01	4.6E+02	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	3.9E+06	--	--	na	8.9E+00	--	--	na	3.9E+05	--	--	na
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	6.8E+00	1.2E+03	na	2.6E+03	2.2E-02	9.0E-03	na	6.0E-03	1.1E+02	2.9E+02	na	2.6E+02	6.8E+00	2.9E+02	na
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	1.3E+04	--	--	na	3.0E-02	--	--	na	1.3E+03	--	--	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocation		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	9.2E+07	--	--	na	2.1E+02	--	--	na	9.2E+06	--	--	na
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	6.2E+06	--	--	na	1.4E+01	--	--	na	6.2E+05	--	--	na
Fluorene	0	--	--	na	5.3E+03	--	--	na	2.3E+08	--	--	na	5.3E+02	--	--	na	2.3E+07	--	--	na
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Guthion	0	--	1.0E-02	na	--	--	3.3E+02	na	--	--	2.5E-03	na	--	--	8.2E+01	na	--	--	8.2E+01	na
Heptachlor ^c	0	5.2E-01	3.8E-03	na	7.9E-04	4.1E+01	1.2E+02	na	4.3E+01	1.3E-01	9.5E-04	na	7.9E-05	6.5E+02	3.1E+01	na	4.3E+00	4.1E+01	3.1E+01	na
Heptachlor Epoxide ^c	0	5.2E-01	3.8E-03	na	3.9E-04	4.1E+01	1.2E+02	na	2.1E+01	1.3E-01	9.5E-04	na	3.9E-05	6.5E+02	3.1E+01	na	2.1E+00	4.1E+01	3.1E+01	na
Hexachlorobenzene ^c	0	--	--	na	2.9E-03	--	--	na	1.6E+02	--	--	na	2.9E-04	--	--	na	1.6E+01	--	--	na
Hexachlorobutadiene ^c	0	--	--	na	1.8E+02	--	--	na	9.8E+06	--	--	na	1.8E+01	--	--	na	9.8E+05	--	--	na
Hexachlorocyclohexane Alpha-BHC ^c	0	--	--	na	4.9E-02	--	--	na	2.7E+03	--	--	na	4.9E-03	--	--	na	2.7E+02	--	--	na
Hexachlorocyclohexane Beta-BHC ^c	0	--	--	na	1.7E-01	--	--	na	9.2E+03	--	--	na	1.7E-02	--	--	na	9.2E+02	--	--	na
Hexachlorocyclohexane Gamma-BHC ^c (Lindane)	0	9.5E-01	na	na	1.8E+00	7.6E+01	--	na	9.8E+04	2.4E-01	--	na	1.8E-01	1.2E+03	--	na	9.8E+03	7.6E+01	--	na
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	4.8E+07	--	--	na	1.1E+02	--	--	na	4.8E+06	--	--	na
Hexachloroethane ^c	0	--	--	na	3.3E+01	--	--	na	1.8E+06	--	--	na	3.3E+00	--	--	na	1.8E+05	--	--	na
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	6.5E+04	na	--	--	5.0E-01	na	--	--	1.6E+04	na	--	--	1.6E+04	na
Indeno (1,2,3-cd) pyrene ^c	0	--	--	na	1.8E-01	--	--	na	9.8E+03	--	--	na	1.8E-02	--	--	na	9.8E+02	--	--	na
Iron	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Isophorone ^c	0	--	--	na	9.6E+03	--	--	na	5.2E+08	--	--	na	9.6E+02	--	--	na	5.2E+07	--	--	na
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na
Lead	0	7.6E+01	8.6E+00	na	--	6.0E+03	2.8E+05	na	--	1.9E+01	2.2E+00	na	--	9.5E+04	7.0E+04	na	--	6.0E+03	7.0E+04	na
Malathion	0	--	1.0E-01	na	--	--	3.3E+03	na	--	--	2.5E-02	na	--	--	8.2E+02	na	--	--	8.2E+02	na
Manganese	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Mercury	0	1.4E+00	7.7E-01	--	--	1.1E+02	2.5E+04	--	--	3.5E-01	1.9E-01	--	--	1.8E+03	6.3E+03	--	--	1.1E+02	6.3E+03	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	6.6E+07	--	--	na	1.5E+02	--	--	na	6.6E+06	--	--	na
Methylene Chloride ^c	0	--	--	na	5.9E+03	--	--	na	3.2E+08	--	--	na	5.9E+02	--	--	na	3.2E+07	--	--	na
Methoxychlor	0	--	3.0E-02	na	--	--	9.8E+02	na	--	--	7.5E-03	na	--	--	2.4E+02	na	--	--	2.4E+02	na
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na
Nickel	0	1.4E+02	1.5E+01	na	4.8E+03	1.1E+04	4.9E+05	na	2.0E+08	3.4E+01	3.8E+00	na	4.8E+02	1.7E+05	1.2E+05	na	2.0E+07	1.1E+04	1.2E+05	na
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	3.0E+07	--	--	na	6.9E+01	--	--	na	3.0E+06	--	--	na
N-Nitrosodimethylamine ^c	0	--	--	na	3.0E+01	--	--	na	1.6E+06	--	--	na	3.0E+00	--	--	na	1.6E+05	--	--	na
N-Nitrosodiphenylamine ^c	0	--	--	na	6.0E+01	--	--	na	3.3E+06	--	--	na	6.0E+00	--	--	na	3.3E+05	--	--	na
N-Nitrosodi-n-propylamine ^c	0	--	--	na	5.1E+00	--	--	na	2.8E+05	--	--	na	5.1E-01	--	--	na	2.8E+04	--	--	na
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.2E+03	2.2E+05	na	--	7.0E+00	1.7E+00	--	--	3.5E+04	5.4E+04	--	--	2.2E+03	5.4E+04	na
Parathion	0	6.5E-02	1.3E-02	na	--	5.2E+00	4.2E+02	na	--	1.6E-02	3.3E-03	na	--	8.1E+01	1.1E+02	na	--	5.2E+00	1.1E+02	na
PCB Total ^c	0	--	1.4E-02	na	6.4E-04	--	4.6E+02	na	3.5E+01	--	3.5E-03	na	6.4E-05	--	1.1E+02	na	3.5E+00	--	1.1E+02	na
Pentachlorophenol ^c	0	8.7E+00	6.7E+00	na	3.0E+01	6.9E+02	2.2E+05	na	1.6E+06	2.2E+00	1.7E+00	na	3.0E+00	1.1E+04	5.5E+04	na	1.6E+05	6.9E+02	5.5E+04	na
Phenol	0	--	--	na	8.6E+05	--	--	na	3.8E+10	--	--	na	8.6E+04	--	--	na	3.8E+09	--	--	na
Pyrene	0	--	--	na	4.0E+03	--	--	na	1.8E+08	--	--	na	4.0E+02	--	--	na	1.8E+07	--	--	na
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocation		
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	1.6E+03	1.6E+05	na	1.8E+08	5.0E+00	1.3E+00	na	4.2E+02	2.5E+04	4.1E+04	na	1.8E+07	1.6E+03	4.1E+04	na
Silver	0	1.9E+00	--	na	--	1.5E+02	--	na	--	4.7E-01	--	na	--	2.4E+03	--	na	--	1.5E+02	--	na
Sulfate	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
1,1,2,2-Tetrachloroethane ^C	0	--	--	na	4.0E+01	--	--	na	2.2E+06	--	--	na	4.0E+00	--	--	na	2.2E+05	--	--	na
Tetrachloroethylene ^C	0	--	--	na	3.3E+01	--	--	na	1.8E+06	--	--	na	3.3E+00	--	--	na	1.8E+05	--	--	na
Thallium	0	--	--	na	4.7E-01	--	--	na	2.1E+04	--	--	na	4.7E-02	--	--	na	2.1E+03	--	--	na
Toluene	0	--	--	na	6.0E+03	--	--	na	2.6E+08	--	--	na	6.0E+02	--	--	na	2.6E+07	--	--	na
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Toxaphene ^C	0	7.3E-01	2.0E-04	na	2.8E-03	5.8E+01	6.5E+00	na	1.5E+02	1.8E-01	5.0E-05	na	2.8E-04	9.1E+02	1.6E+00	na	1.5E+01	5.8E+01	1.6E+00	na
Tributyltin	0	4.6E-01	7.2E-02	na	--	3.7E+01	2.3E+03	na	--	1.2E-01	1.8E-02	na	--	5.8E+02	5.9E+02	na	--	3.7E+01	5.9E+02	na
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	3.1E+06	--	--	na	7.0E+00	--	--	na	3.1E+05	--	--	na
1,1,2-Trichloroethane ^C	0	--	--	na	1.6E+02	--	--	na	8.7E+06	--	--	na	1.6E+01	--	--	na	8.7E+05	--	--	na
Trichloroethylene ^C	0	--	--	na	3.0E+02	--	--	na	1.6E+07	--	--	na	3.0E+01	--	--	na	1.6E+06	--	--	na
2,4,6-Trichlorophenol ^C	0	--	--	na	2.4E+01	--	--	na	1.3E+06	--	--	na	2.4E+00	--	--	na	1.3E+05	--	--	na
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na
Vinyl Chloride ^C	0	--	--	na	2.4E+01	--	--	na	1.3E+06	--	--	na	2.4E+00	--	--	na	1.3E+05	--	--	na
Zinc	0	8.7E+01	8.8E+01	na	2.6E+04	6.9E+03	2.9E+06	na	1.1E+09	2.2E+01	2.2E+01	na	2.6E+03	1.1E+05	7.2E+05	na	1.1E+08	6.9E+03	7.2E+05	na

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = $(0.25(WQC - \text{background conc.}) + \text{background conc.})$ for acute and chronic
= $(0.1(WQC - \text{background conc.}) + \text{background conc.})$ for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	2.8E+06
Arsenic	1.1E+04
Barium	na
Cadmium	8.4E+01
Chromium III	1.4E+04
Chromium VI	5.1E+02
Copper	3.1E+02
Iron	na
Lead	2.4E+03
Manganese	na
Mercury	4.5E+01
Nickel	4.3E+03
Selenium	6.4E+02
Silver	6.0E+01
Zinc	2.8E+03

Note: do not use QL's low minimum QL's provided in guidance

0.005 MGD DISCHARGE FLOW - STREAM MIX PER "Mix.exe"					
Discharge Flow Used for WQS-WLA Calculations (MGD)		0.005			
Stream Flows		Total Mix Flows			
<u>Allocated to Mix (MGD)</u>		<u>Stream + Discharge (MGD)</u>			
	<u>Dry Season</u>	<u>Wet Season</u>	<u>Dry Season</u>	<u>Wet Season</u>	
1Q10	0.393	40.000	0.398	40.005	
7Q10	163.000	N/A	163.005	N/A	
30Q10	190.000	222.000	190.005	222.005	
30Q5	220.000	N/A	220.005	N/A	
Harm. Mean	272.000	N/A	272.005	N/A	
Annual Avg.	0.000	N/A	0.005	N/A	
<u>Stream/Discharge Mix Values</u>					
		<u>Dry Season</u>	<u>Wet Season</u>		
1Q10 90th% Temp. Mix (deg C)		26.400	19.600		
30Q10 90th% Temp. Mix (deg C)		26.400	19.600		
1Q10 90th% pH Mix (SU)		8.285	8.399		
30Q10 90th% pH Mix (SU)		8.400	8.400		
1Q10 10th% pH Mix (SU)		7.000	N/A		
7Q10 10th% pH Mix (SU)		7.000	N/A		
		<u>Calculated</u>	<u>Formula Inputs</u>		
1Q10 Hardness (mg/L as CaCO3)		70.4	70.4		
7Q10 Hardness (mg/L as CaCO3)		70.4	70.4		
		<u>Ammonia - Dry Season - Acute</u>		<u>Ammonia - Dry Season - Chronic</u>	
		90th Percentile pH (SU)	8.285	90th Percentile Temp. (deg C)	26.400
		(7.204 - pH)	-1.081	90th Percentile pH (SU)	8.400
		(pH - 7.204)	1.081	MIN	1.325
		Trout Present Criterion (mg N/L)	3.243	MAX	26.400
		Trout Absent Criterion (mg N/L)	4.855	(7.688 - pH)	-0.712
		Trout Present?	n	(pH - 7.688)	0.712
		Effective Criterion (mg N/L)	4.855	Early LS Present Criterion (mg N)	0.600
				Early LS Absent Criterion (mg N)	0.600
				Early Life Stages Present?	y
				Effective Criterion (mg N/L)	0.600
		<u>Ammonia - Wet Season - Acute</u>		<u>Ammonia - Wet Season - Chronic</u>	
		90th Percentile pH (SU)	8.399	90th Percentile Temp. (deg C)	19.600
		(7.204 - pH)	-1.195	90th Percentile pH (SU)	8.400
		(pH - 7.204)	1.195	MIN	2.054
		Trout Present Criterion (mg N/L)	2.600	MAX	19.600
		Trout Absent Criterion (mg N/L)	3.892	(7.688 - pH)	-0.712
		Trout Present?	n	(pH - 7.688)	0.712
		Effective Criterion (mg N/L)	3.892	Early LS Present Criterion (mg N)	0.930
				Early LS Absent Criterion (mg N)	0.930
				Early Life Stages Present?	y
				Effective Criterion (mg N/L)	0.930

0.005 MGD DISCHARGE FLOW - COMPLETE STREAM MIX					
Discharge Flow Used for WQS-WLA Calculations (MGD)		0.005			
100% Stream Flows		Total Mix Flows			
Allocated to Mix (MGD)		Stream + Discharge (MGD)			
	Dry Season	Wet Season	Dry Season	Wet Season	
1Q10	25.000	40.000	25.005	40.005	
7Q10	163.000	N/A	163.005	N/A	
30Q10	190.000	222.000	190.005	222.005	
30Q5	220.000	N/A	220.005	N/A	
Harm. Mean	272.000	N/A	272.005	N/A	
Annual Avg.	0.000	N/A	0.005	N/A	
<u>Stream/Discharge Mix Values</u>					
		Dry Season	Wet Season		
1Q10 90th% Temp. Mix (deg C)		26.400	19.600		
30Q10 90th% Temp. Mix (deg C)		26.400	19.600		
1Q10 90th% pH Mix (SU)		8.398	8.399		
30Q10 90th% pH Mix (SU)		8.400	8.400		
1Q10 10th% pH Mix (SU)		7.000	N/A		
7Q10 10th% pH Mix (SU)		7.000	N/A		
		Calculated	Formula Inputs		
1Q10 Hardness (mg/L as CaCO3) =		70.400	70.400		
7Q10 Hardness (mg/L as CaCO3) =		70.400	70.400		
		<u>Ammonia - Dry Season - Acute</u>			
		90th Percentile pH (SU)			
		(7.204 - pH)			
		(pH - 7.204)			
		Trout Present Criterion (mg N/L)			
		Trout Absent Criterion (mg N/L)			
		Trout Present?			
		Effective Criterion (mg N/L)			
		<u>Ammonia - Dry Season - Chronic</u>			
		90th Percentile Temp. (deg C)			
		90th Percentile pH (SU)			
		MIN			
		MAX			
		(7.688 - pH)			
		(pH - 7.688)			
		Early LS Present Criterion (mg N)			
		Early LS Absent Criterion (mg N)			
		Early Life Stages Present?			
		Effective Criterion (mg N/L)			
		<u>Ammonia - Wet Season - Acute</u>			
		90th Percentile pH (SU)			
		(7.204 - pH)			
		(pH - 7.204)			
		Trout Present Criterion (mg N/L)			
		Trout Absent Criterion (mg N/L)			
		Trout Present?			
		Effective Criterion (mg N/L)			
		<u>Ammonia - Wet Season - Chronic</u>			
		90th Percentile Temp. (deg C)			
		90th Percentile pH (SU)			
		MIN			
		MAX			
		(7.688 - pH)			
		(pH - 7.688)			
		Early LS Present Criterion (mg N)			
		Early LS Absent Criterion (mg N)			
		Early Life Stages Present?			
		Effective Criterion (mg N/L)			

0.005 MGD DISCHARGE FLOW - STREAM MIX PER "Mix.exe"

Discharge Flow Used for WQS-WLA Calculations (MGD) 0.005					Ammonia - Dry Season - Acute		Ammonia - Dry Season - Chronic	
<u>Stream Flows</u>		<u>Total Mix Flows</u>			90th Percentile pH (SU)	8.285	90th Percentile Temp. (deg C)	26.400
<u>Allocated to Mix (MGD)</u>		<u>Stream + Discharge (MGD)</u>			(7.204 - pH)	-1.081	90th Percentile pH (SU)	8.400
	<u>Dry Season</u>	<u>Wet Season</u>	<u>Dry Season</u>	<u>Wet Season</u>	(pH - 7.204)	1.081	MIN	1.325
1Q10	0.393	40.000	0.398	40.005	Trout Present Criterion (mg N/l)	3.243	MAX	26.400
7Q10	163.000	N/A	163.005	N/A	Trout Absent Criterion (mg N/L)	4.855	(7.688 - pH)	-0.712
30Q10	190.000	222.000	190.005	222.005	Trout Present?	n	(pH - 7.688)	0.712
30Q5	220.000	N/A	220.005	N/A	Effective Criterion (mg N/L)	4.855	Early LS Present Criterion (mg N)	0.600
Harm. Mean	272.000	N/A	272.005	N/A			Early LS Absent Criterion (mg N/	0.600
Annual Avg.	0.000	N/A	0.005	N/A			Early Life Stages Present?	y
							Effective Criterion (mg N/L)	0.600
<u>Stream/Discharge Mix Values</u>					Ammonia - Wet Season - Acute		Ammonia - Wet Season - Chronic	
			<u>Dry Season</u>	<u>Wet Season</u>	90th Percentile pH (SU)	8.399	90th Percentile Temp. (deg C)	19.600
1Q10 90th% Temp. Mix (deg C)			26.382	19.600	(7.204 - pH)	-1.195	90th Percentile pH (SU)	8.400
30Q10 90th% Temp. Mix (deg C)			26.400	19.600	(pH - 7.204)	1.195	MIN	2.054
1Q10 90th% pH Mix (SU)			8.285	8.399	Trout Present Criterion (mg N/l)	2.600	MAX	19.600
30Q10 90th% pH Mix (SU)			8.400	8.400	Trout Absent Criterion (mg N/L)	3.892	(7.688 - pH)	-0.712
1Q10 10th% pH Mix (SU)			7.000	N/A	Trout Present?	n	(pH - 7.688)	0.712
7Q10 10th% pH Mix (SU)			7.000	N/A	Effective Criterion (mg N/L)	3.892	Early LS Present Criterion (mg N)	0.930
			<u>Calculated</u>	<u>Formula Inputs</u>			Early LS Absent Criterion (mg N/	0.930
1Q10 Hardness (mg/L as CaCO3)			70.4	70.4			Early Life Stages Present?	y
7Q10 Hardness (mg/L as CaCO3)			70.4	70.4			Effective Criterion (mg N/L)	0.930

0.005 MGD DISCHARGE FLOW - COMPLETE STREAM MIX

Discharge Flow Used for WQS-WLA Calculations (MGD) 0.005					Ammonia - Dry Season - Acute		Ammonia - Dry Season - Chronic	
<u>100% Stream Flows</u>		<u>Total Mix Flows</u>			90th Percentile pH (SU)	8.398	90th Percentile Temp. (deg C)	26.400
<u>Allocated to Mix (MGD)</u>		<u>Stream + Discharge (MGD)</u>			(7.204 - pH)	-1.194	90th Percentile pH (SU)	8.400
	<u>Dry Season</u>	<u>Wet Season</u>	<u>Dry Season</u>	<u>Wet Season</u>	(pH - 7.204)	1.194	MIN	1.325
1Q10	25.000	40.000	25.005	40.005	Trout Present Criterion (mg N/l)	2.604	MAX	26.400
7Q10	163.000	N/A	163.005	N/A	Trout Absent Criterion (mg N/L)	3.898	(7.688 - pH)	-0.712
30Q10	190.000	222.000	190.005	222.005	Trout Present?	n	(pH - 7.688)	0.712
30Q5	220.000	N/A	220.005	N/A	Effective Criterion (mg N/L)	3.898	Early LS Present Criterion (mg N)	0.600
Harm. Mean	272.000	N/A	272.005	N/A			Early LS Absent Criterion (mg N/	0.600
Annual Avg.	0.000	N/A	0.005	N/A			Early Life Stages Present?	y
							Effective Criterion (mg N/L)	0.600
<u>Stream/Discharge Mix Values</u>					Ammonia - Wet Season - Acute		Ammonia - Wet Season - Chronic	
			<u>Dry Season</u>	<u>Wet Season</u>	90th Percentile pH (SU)	8.399	90th Percentile Temp. (deg C)	19.600
1Q10 90th% Temp. Mix (deg C)			26.400	19.600	(7.204 - pH)	-1.195	90th Percentile pH (SU)	8.400
30Q10 90th% Temp. Mix (deg C)			26.400	19.600	(pH - 7.204)	1.195	MIN	2.054
1Q10 90th% pH Mix (SU)			8.398	8.399	Trout Present Criterion (mg N/	2.600	MAX	19.600
30Q10 90th% pH Mix (SU)			8.400	8.400	Trout Absent Criterion (mg N/L)	3.892	(7.688 - pH)	-0.712
1Q10 10th% pH Mix (SU)			7.000	N/A	Trout Present?	n	(pH - 7.688)	0.712
7Q10 10th% pH Mix (SU)			7.000	N/A	Effective Criterion (mg N/L)	3.892	Early LS Present Criterion (mg N)	0.930
			<u>Calculated</u>	<u>Formula Inputs</u>			Early LS Absent Criterion (mg N/	0.930
1Q10 Hardness (mg/L as CaCO3) =			70.400	70.400			Early Life Stages Present?	y
7Q10 Hardness (mg/L as CaCO3) =			70.400	70.400			Effective Criterion (mg N/L)	0.930

7/2/2012 12:10:57 PM

Facility = Smith Mountain Dam Visitor's Center

Chemical = ammonia (mg/L)

Chronic averaging period = 30

WLAa = 386

WLAc = 5700

Q.L. = 0.2

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 9

Variance = 29.16

C.V. = 0.6

97th percentile daily values = 21.9007

97th percentile 4 day average = 14.9741

97th percentile 30 day average = 10.8544

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

6/21/2012 4:45:51 PM

Facility = Smith Mountain Dam Visitor's Center

Chemical = TRC

Chronic averaging period = 4

WLAa = 4

WLAc =

Q.L. = 1000

samples/mo. = 30

samples/wk. = 8

Summary of Statistics:

observations = 1

Expected Value = 1000

Variance = 360000

C.V. = 0.6

97th percentile daily values = 2433.41

97th percentile 4 day average = 1663.79

97th percentile 30 day average = 1206.05

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity

Maximum Daily Limit = 4

Average Weekly limit = 2.38602034360889

Average Monthly Limit = 1.98248465547072

The data are:

1000

Attachment G

Reduced Monitoring Frequency

- **Reduced Monitoring Evaluation Memorandum**
- **Permittee Response to TRC Exceedances**

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY *Blue Ridge Regional Office*

3019 Peters Creek Road

Roanoke, VA 24019

SUBJECT: Justification for Reduced Monitoring Frequency
Reissuance of VPDES Permit No. VA0074179
Smith Mountain Dam Visitor's Center WWTP

TO: Permit File

FROM: Becky L. France, Water Permit Writer *BLF*

DATE: June 25, 2012

Compliance History

The VPDES Permit Manual recommends effluent monitoring frequencies. In the previous permit term, the treatment facility qualified for reduced monitoring frequencies. Guidance Memo 98-2005 allows for reduced monitoring at facilities with excellent compliance histories. During the 2007 permit term the facility permit contained reduced monitoring frequencies for TSS and BOD₅. For this reissuance, the eligibility for continued reduced monitoring has been evaluated.

To qualify for consideration of reduced monitoring, the facility should not have been issued any Letter of Noncompliance (LON), Notice of Violation (NOV), Warning Letter, or Unsatisfactory Laboratory Determinations, or be under any Consent Orders, Consent Decrees, Executive Compliance Agreements, or related enforcement documents during the past three years.

The permittee qualified for reduced monitoring during the 2002-2007 and the 2007-2012 permit terms. On March 2011, a warning letter (W2011-05-W-1009) was issued for exceedances of the monthly average and weekly average total residual chlorine (TRC) limits. The permittee only discharged three times in March 2011 and was unable to reduce the monthly average below the limit. The permittee believed the chlorine tablets to be defective. Corrective actions included changing to another batch of tablets and more closely observing tablets daily. No further chlorine violations have been noted during the permit term.

The TRC limits are best practical judgment limits that are based upon the STATS program output and a wasteload allocation of 4.0 mg/L. The STATS program indicated that limits of 1.982... and 2.386...mg/L were needed. For the 2007 permit term, the limits were truncated to provide two significant figures. Using current Agency rounding conventions found in Guidance Memo 06-2016, the output from this STATS program will be rounded up for these two numbers to 2.0 mg/L monthly average and 2.4 mg/L maximum.

Warning Letters are issued to permittees that have at least one point. For final TRC, the first and second "nonsignificant" violations, 0.2 points are assigned. For final TRC, the first and second significant violations, 0.5 points are assigned. A value is determined to be significant if it is equal to/exceeds or does not meet the VPDES permit limit by 1.2 times. For the Warning Letter the reported 2.33 mg/L monthly average is more than 2.28 mg/L (level of significance) and the reported 3.00 mg/L weekly average is more than 2.76

mg/L (level of significance). So, the permittee was issued a Warning Letter due to the accrual of 1 point. If these points were calculated based upon the revised limits for the reissuance, the reported 2.33 mg/L monthly average is less than 2.4 mg/L (level of significance) and the reported 3.00 mg/L weekly average is greater than the 2.88 mg/L (level of significance). Using these new revised limits the points would be 0.2 for the insignificant monthly average violation and 0.5 points for the significant weekly average violation. The total of 0.7 points would not have resulted in a warning letter.

Given the permittee's compliance history and limit calculation errors, it is not believed that they should be automatically disqualified from reduced monitoring. Therefore, an exception has been made, and the effluent data has been evaluated for reduced monitoring.

Monitoring Data Evaluation

Discharge Monitoring Report (DMR) data from March 2004 through February 2007 were reviewed and summarized in Table 2. Of the parameters monitored only pH, total suspended solids (TSS), and biochemical oxygen demand (BOD₅) can be considered for reduced monitoring. Total residual chlorine limits are not considered eligible for reduced monitoring to ensure protection of aquatic life and human health. The actual performance to permit limit ratios are summarized in the table below. Facilities with baseline monitoring that have an actual performance to permit limit ratio of greater than 75 percent are not eligible for reduced monitoring.

Table 1 Performance to Permit Limit Ratios (DMR Data)

Parameter	Actual Performance/ Permit Limit Monthly Average*	Actual Performance/ Permit Limit (Maximum)*	Reduced Monitoring
pH	--	--	NA
TSS	3%, 0.6%	2%, 0.4%	1/ 6 Months
BOD ₅	4%, 0.6%	2%, 0.4%	1/ 6 Months

*The ratio based upon concentration is listed first, and the ratio based upon loading is listed second.

pH: One of the reported values was within 0.5 Standard Units of the limit. Therefore, this facility does not qualify for a reduction in pH monitoring. The pH monitoring shall continue at 1/discharge-day.

TSS: The DMR data are consistently well below the permit limits. According to Guidance Memo 98-2005, facilities with baseline monitoring that have an actual performance to permit limit ratio of less than 25 percent are eligible for a reduced monitoring frequency of 1/ 6 months. The monitoring frequency for TSS of 1/ 6 months has been continued from the previous permit.

BOD₅: The DMR data are consistently below the permit limits. According to Guidance Memo 98-2005, facilities with baseline monitoring that have an actual performance to permit limit ratio of less than 25 percent are eligible for a reduced monitoring frequency of 1/ 6 months. The monitoring frequency for TSS of 1/ 6 months has been continued from the previous permit.

The permit will contain a special condition that will revert the TSS and BOD₅ monitoring frequencies back to 1/month if a Notice of Violation is issued for any of the parameters with reduced monitoring. The permittee is still expected to take all appropriate measures to control both the average and maximum concentrations of the pollutants of concern, regardless of any reductions in monitoring frequencies.

Table 2 TSS DMR Data for Smith Mountain Dam Visitor's Center

Due Date	TSS				BOD ₅			
	average kg/d	max kg/d	average mg/L	max mg/L	average kg/d	max kg/d	average mg/L	max mg/L
10-May-08	0.01	0.01	2	2	0.03	0.03	10	10
10-Nov-08	0.01	0.01	1	1	<QL	<QL	<QL	<QL
10-May-09	0.003	0.003	1	1	<QL	<QL	<QL	<QL
10-Nov-09	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-May-10	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-Nov-10	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-May-11	0.0065	0.0065	3	3	<QL	<QL	<QL	<QL
10-Nov-11	<0.0036	<0.0036	<1	<1	<0.0178	<0.0178	<2	<2
10-May-12	0.0023	0.0023	1	1	<0.0178	<0.0178	<2	<2
mean	0.004	0.004	0.889	0.889	0.003	0.003	1.111	1.111
maximum	0.010	0.010	3	3	0.03	0.03	10	10
minimum	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
permit limit	0.57	0.85	30	45	0.57	0.85	30	45
performance / permit limit) 100	0.6	0.4	3	2	0.6	0.4	4	2

Table 3 pH DMR Data for Smith Mountain Dam Visitor's Center

Date DMR Due	pH, min S.U.	H ion conc	pH, max S.U.	H ion conc
10-Dec-07	7	1.000E-07	7	1.000E-07
10-Jan-08	7	1.000E-07	7	1.000E-07
10-Feb-08	7	1.000E-07	7	1.000E-07
10-Mar-08	7	1.000E-07	7	1.000E-07
10-Apr-08	7	1.000E-07	7	1.000E-07
10-May-08	7	1.000E-07	7	1.000E-07
10-Jun-08	7	1.000E-07	7	1.000E-07
10-Jul-08	7	1.000E-07	7	1.000E-07
10-Aug-08	7	1.000E-07	7	1.000E-07
10-Sep-08	7	1.000E-07	7	1.000E-07
10-Oct-08	7	1.000E-07	7	1.000E-07
10-Nov-08	7	1.000E-07	7	1.000E-07
10-Dec-08	7	1.000E-07	7	1.000E-07
10-Jan-09	7	1.000E-07	7	1.000E-07
10-Feb-09	7	1.000E-07	7	1.000E-07
10-Mar-09	7	1.000E-07	7	1.000E-07
10-Apr-09	7	1.000E-07	7	1.000E-07
10-May-09	7	1.000E-07	7	1.000E-07
10-Jun-09	7	1.000E-07	7	1.000E-07
10-Jul-09	7	1.000E-07	7	1.000E-07
10-Aug-09	7	1.000E-07	7	1.000E-07
10-Sep-09	7	1.000E-07	7	1.000E-07
10-Oct-09	7	1.000E-07	7	1.000E-07
10-Nov-09	7	1.000E-07	7	1.000E-07
10-Dec-09	7	1.000E-07	7	1.000E-07
10-Jan-10	7	1.000E-07	7	1.000E-07
10-Feb-10	7	1.000E-07	7	1.000E-07
10-Mar-10	7	1.000E-07	7	1.000E-07
10-Apr-10	7	1.000E-07	7	1.000E-07
10-May-10	7	1.000E-07	7	1.000E-07
10-Jun-10	7	1.000E-07	7	1.000E-07
10-Jul-10	7	1.000E-07	7	1.000E-07
10-Aug-10	7	1.000E-07	7	1.000E-07
10-Sep-10	7	1.000E-07	7	1.000E-07
10-Oct-10	7	1.000E-07	7	1.000E-07
10-Nov-10	7	1.000E-07	7	1.000E-07
10-Dec-10	7	1.000E-07	7	1.000E-07
10-Jan-11	7	1.000E-07	7	1.000E-07
10-Feb-11	7	1.000E-07	7	1.000E-07
10-Mar-11	7	1.000E-07	7	1.000E-07
10-Apr-11	7	1.000E-07	7	1.000E-07
10-May-11	7	1.000E-07	7	1.000E-07
10-Jun-11	7	1.000E-07	7	1.000E-07
10-Jul-11	7	1.000E-07	7	1.000E-07
10-Aug-11	7	1.000E-07	7	1.000E-07
10-Sep-11	6.5	3.162E-07	7	1.000E-07
10-Oct-11	6.9	1.259E-07	7	1.000E-07
10-Nov-11	7	1.000E-07	7	1.000E-07

Table 3 **pH DMR Data for Smith Mountain Dam Visitor's Center**

Date DMR Due	pH, min S.U.	H ion conc	pH, max S.U.	H ion conc
10-Dec-11	7	1.000E-07	7	1.000E-07
10-Jan-12	7	1.000E-07	7	1.000E-07
10-Feb-12	7	1.000E-07	7	1.000E-07
10-Mar-12	7	1.000E-07	7	1.000E-07
10-Apr-12	7	1.000E-07	7	1.000E-07
10-May-12	7	1.000E-07	7	1.000E-07
10-Jun-12	7	1.000E-07	7	1.000E-07
mean	6.98	1.044E-07	7.00	1.000E-07
maximum			7.00	
minimum	6.50			
permit limit	6.0	1.000E-06	9.0	1.000E-09

Table 4 Flow DMR Data for Smith Mountain Dam Visitor's Center

Date DMR Due	MGD Monthly Ave.	MGD Max.
10-Dec-07	0.001	0.001
10-Jan-08	0.001	0.001
10-Feb-08	0.001	0.001
10-Mar-08	0.001	0.001
10-Apr-08	0.001	0.001
10-May-08	0.001	0.001
10-Jun-08	0.001	0.001
10-Jul-08	0.001	0.001
10-Aug-08	0.001	0.001
10-Sep-08	0.001	0.001
10-Oct-08	0.001	0.001
10-Nov-08	0.001	0.001
10-Dec-08	0.001	0.001
10-Jan-09	0.001	0.001
10-Feb-09	0.001	0.001
10-Mar-09	0.001	0.001
10-Apr-09	0.001	0.001
10-May-09	0.001	0.001
10-Jun-09	0.001	0.001
10-Jul-09	0.001	0.001
10-Aug-09	0.001	0.001
10-Sep-09	0.001	0.001
10-Oct-09	0.001	0.001
10-Nov-09	0.001	0.001
10-Dec-09	0.001	0.001
10-Jan-10	0.001	0.001
10-Feb-10	0.001	0.001
10-Mar-10	0.001	0.001
10-Apr-10	0.001	0.001
10-May-10	0.001	0.001
10-Jun-10	0.001	0.001
10-Jul-10	0.001	0.001
10-Aug-10	0.001	0.001
10-Sep-10	0.001	0.001
10-Oct-10	0.001	0.001
10-Nov-10	0.001	0.001
10-Dec-10	0.001	0.001
10-Jan-11	0.001	0.001
10-Feb-11	0.001	0.001
10-Mar-11	0.001	0.001
10-Apr-11	0.001	0.001
10-May-11	0.001	0.001
10-Jun-11	0.001	0.001
10-Jul-11	0.001	0.001

Table 4 **Flow DMR Data for Smith Mountain Dam Visitor's Center**

Date DMR Due	MGD Monthly Ave.	MGD Max.
10-Aug-11	0.001	0.001
10-Sep-11	0.001	0.001
10-Oct-11	0.001	0.001
10-Nov-11	0.001	0.001
10-Dec-11	0.001	0.001
10-Jan-12	0.001	0.001
10-Feb-12	0.001	0.001
10-Mar-12	0.001	0.001
10-Apr-12	0.001	0.001
10-May-12	0.001	0.001
10-Jun-12	0.001	0.001
permit limit	0.005	



A unit of American Electric Power

Appalachian Power
Hydro Generation
P O Box 2021
Roanoke, VA 24022-2121
AppalachianPower.com

Ms. Cathy D. Kibler
Virginia Department of Environmental Quality
Blue Ridge Region – Roanoke Office
3019 Peters Creek Road
Roanoke, Virginia 24019

April 8, 2011

**Re: Appalachian Power Company – Smith Mountain Dam Visitor's Center
VPDES Permit No. VA0074179
Total Residual Chlorine Exceedance Explanation to March 2011 eDMR Submittal**

Dear Ms. Kibler:

Pursuant to Part II.I.3. of the referenced permit, please find contained herein an explanation of the reported Total Residual Chlorine (TRC) exceedances from the sewage treatment plant at Appalachian Power Company's Smith Mountain Dam Visitor's Center. Three (3) discharges from the treatment works occurred during the month of March 2011; March 2, 12 and 23. The measured TRC concentrations during those discharges were 1.5, 2.5 and 3.0 mg/L, respectively. The treatment works appeared to be in good working order during the monitoring events and no cause of the elevated TRC was evident.

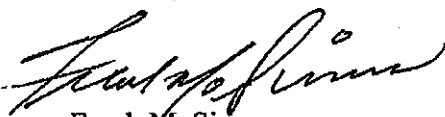
On March 29, Company representatives and staff from Water Chemistry, Inc. conducted a thorough investigation of the treatment facility and began narrowing potential causes of the exceedances. The TRC exceedances appear to be the result of chlorine tablets prematurely breaking down. In order to correct the problem, the chlorine chamber has since been cleaned of residual chlorine tablet material, and chlorine chamber reloaded with new tablets. We believe the cause has since been resolved and do not anticipate further exceedances.

This letter is being enclosed as an "upload" attachment to the eDMR submittal for March 2011 for the facility. If you have any questions or need additional information, please contact Jeff Reece of my staff at (574) 236-1682 or at jnreece@aep.com.

Ms. Cathy D. Kibler
April 8, 2011
Page 2

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering and evaluating the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,



Frank M. Simms
Plant Manager II

Enclosure

Attachment H

Public Notice

PUBLIC NOTICE – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Bedford County.

PUBLIC COMMENT PERIOD: August 4, 2012 through September 3, 2012 at 4:30 pm

PERMIT NAME: Virginia Pollutant Discharge Elimination System – Wastewater issued by DEQ, under the authority of the State Water Control Board

NAME, ADDRESS, AND PERMIT NUMBER OF APPLICANT: Appalachian Power Company, 1 Riverside Plaza, Columbus, OH 43215, VA0074179

NAME AND ADDRESS OF FACILITY: Smith Mountain Dam Visitor's Center, 2072 Ford Road, Sandy Level, VA 24161

PROJECT DESCRIPTION: Smith Mountain Dam Visitor's Center has applied for a reissuance of a permit for the wastewater treatment plant in Bedford County. The applicant proposes to release treated sewage at a rate of 0.005 MGD from the current facility into a water body. Septage from the treatment process will be disposed of at a wastewater treatment plant. The facility proposes to release the treated sewage into the Roanoke River in Bedford County in the Leesville Lake/Old Womans Creek Watershed (VAW-L13R). A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: nutrients, organic matter, solids.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax, or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for a public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if a public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS, AND ADDITIONAL INFORMATION:

Becky L. France; ADDRESS: Virginia Department of Environmental Quality, Blue Ridge Regional Office, 3019 Peters Creek Road, Roanoke, VA 24019-2738; (540) 562-6700; E-MAIL ADDRESS: becky.france@deq.virginia.gov; FAX: (540) 562-6725. The public may review the draft permit and application at the DEQ office named above (by appointment) or may request copies of the documents from the contact person listed above.

Attachment I

EPA Review Checksheet

Revised 2/2003

**State "FY2003 Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name: Smith Mountain Dam Visitor's Center WWTP

NPDES Permit Number: VA0074179

Permit Writer Name: Becky L. France

Date: 6/21/12

Major ☐

Minor ☒

Industrial ☐

Municipal ☒

I.A. Draft Permit Package Submittal Includes:

	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?			X
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?		X	
8. Whole Effluent Toxicity Test summary and analysis?			X
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics

	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet or permit contain a description of the wastewater treatment process?	X		

I.B. Permit/Facility Characteristics – cont. (FY2003)	Yes	No	N/A
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?		X	
a. Has a TMDL been developed and approved by EPA for the impaired water?			X
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?			X
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?			X
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?			X
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?			X
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist (FY2003)

Region III NPDES Permit Quality Checklist – for POTWs (To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?			X

II.C. Technology-Based Effluent Limits (POTWs)	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?			X

II.D. Water Quality-Based Effluent Limits – cont. (FY2003)	Yes	No	N/A
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a “reasonable potential” evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?	X		
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?			X
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?	X		
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			X
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?		X	

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?			X
2. Does the permit include appropriate storm water program requirements?			X

II.F. Special Conditions – cont. (FY2003)	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?			X
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?			X
a. Does the permit require implementation of the "Nine Minimum Controls"?			X
b. Does the permit require development and implementation of a "Long Term Control Plan"?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?			X

II.G. Standard Conditions	Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		
List of Standard Conditions – 40 CFR 122.41			
Duty to comply	Property rights	Reporting Requirements	
Duty to reapply	Duty to provide information	Planned change	
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance	
not a defense	Monitoring and records	Transfers	
Duty to mitigate	Signatory requirement	Monitoring reports	
Proper O & M	Bypass	Compliance schedules	
Permit actions	Upset	24-Hour reporting	
		Other non-compliance	
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?	X		

Part II. NPDES Draft Permit Checklist (FY2003)

Region III NPDES Permit Quality Review Checklist – For Non-Municipals

(To be completed and included in the record for all non-POTWs)

-----NOT APPLICABLE-----

Part III. Signature Page (FY2003)

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	<u>Becky L. France</u>
Title	<u>Water Permit Writer</u>
Signature	<u><i>Becky L. France</i></u>
Date	<u>6/21/12</u>